

SN 09/776,086
Docket No. S-91,756
In Response to Office Action dated November 20, 2002

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

Claim 1 (currently amended): Apparatus for processing materials in an atmospheric pressure radio-frequency non-thermal plasma comprising:

an electrically conductive enclosure defining an interior space with a surface and openings for introductions of a gas and for entry and exit of a material to be processed while said interior space is at or near atmospheric pressure;

an electrode situated inside said interior space and spaced apart from said surface of said interior space a distance sufficient to allow placement of said material to be processed;

a mechanical action for placing said material to be processed inside said interior space on said electrode or between said electrode and said electrically conductive enclosure;

wherein a gas containing a majority of inert gas is introduced into said interior space through said opening for introduction of a gas and a radio-frequency voltage applied between said electrically conductive enclosure and said electrode creates an atmospheric pressure plasma in said interior space for processing said material to be processed within said electrically conductive enclosure.

Claim 2 (previously presented): The apparatus as described in Claim 1, wherein said mechanical action for placing said material to be processed comprises a roller.

Claim 3 (currently amended): The apparatus as described in Claim 1, wherein said gas is comprised of an said inert gas and a chemically reactive gas.

Claim 4 (original): The apparatus as described in Claim 1, wherein said gas is introduced at low flow rate.

Claim 5 (original): The apparatus as described in Claim 3, wherein said inert gas is helium and said chemically reactive gas contains oxygen.

Claim 6 (original): The apparatus as described in Claim 1, wherein said radio frequency voltage has a frequency of 13.56 Megahertz.

Claim 7 (previously presented): The apparatus as described in Claim 1, wherein said apparatus is enclosed by a grounded casing and a first radio frequency voltage having a first phase is applied between said electrode and said grounded casing and a second radio frequency voltage having a second phase offset from said first phase is applied between said electrically conductive enclosure and said grounded casing.

Claim 8 (original): The apparatus as described in Claim 7, wherein said second phase is offset from said first phase by up to 180°.

Claim 9 (currently amended): Apparatus for processing materials in an atmospheric pressure radio-frequency non-thermal plasma comprising:

an electrically conductive enclosure defining an interior space with a surface and inlets for a gas and for entry and exit of a material to be processed while said interior space is at or near atmospheric pressure;

an electrode spaced apart from said electrically conductive enclosure and capable of placing said material to be processed inside said interior space between said electrically conductive enclosure and said electrode, said material to be processed being in contact with said electrode;

wherein a gas containing a majority of inert gas is introduced into said inlet for gas and a radio-frequency voltage applied between said electrically conductive enclosure and said electrode creates an atmospheric pressure plasma in said interior space for processing said material to be processed as it passes through said electrically conductive enclosure.

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Claim 10 (original): The apparatus as described in Claim 9, wherein said electrode and said electrically conductive enclosure are cylindrically shaped.

Claim 11 (original): The apparatus as described in Claim 9, wherein said electrode is a rotating roller.

Claim 12 (currently amended): The apparatus as described in Claim 9, wherein said gas is comprised of ~~an~~ said inert gas and a chemically reactive gas.

Claim 13 (original): The apparatus as described in Claim 12, wherein said inert gas is helium and said chemically reactive gas contains oxygen.

Claim 14 (original): The apparatus as described in Claim 13, wherein said gas is introduced at a low flow rate.

Claim 15 (original): The apparatus as described in Claim 9, wherein said radio frequency voltage has a frequency of 13.56 Megahertz.

Claim 16 (previously presented): The apparatus as described in Claim 9, wherein said apparatus is enclosed by a grounded casing and a first radio frequency voltage having a first phase is applied between said radio frequency electrode and said grounded casing and a second radio frequency voltage having a second phase offset from said first phase is applied between said electrically conductive enclosure and said grounded casing.

Claim 17 (original): The apparatus as described in Claim 16, wherein said second phase is offset from said first phase by up to 180°.

Claims 18-25 (canceled)